

WHAT IS CLAIMED IS:

1. A nitride-based semiconductor element comprising:
a plurality of mask layers formed at a prescribed
5 interval to come into contact with the upper surface of an
underlayer while partially exposing said underlayer; and
a nitride-based semiconductor layer, formed on the *= facets*
upper surface of said underlayer and said mask layers,
consisting of a material different from that of said
10 underlayer, wherein
the minimum distance between adjacent said mask
layers is smaller than the width of an exposed part of
said underlayer located between said adjacent mask layers.
- 15 2. The nitride-based semiconductor element according
to claim 1, wherein
said underlayer includes a substrate, and
said mask layers are formed to be in contact with the
upper surface of said substrate.
- 20 3. The nitride-based semiconductor element according
to claim 1, further comprising facets, formed on an *= N based Semiconductor layer?*
exposed part of the upper surface of said underlayer *Figs 1&2*
located between said adjacent mask layers, having at least
25 two types of different sizes.

4. The nitride-based semiconductor element according to claim 1, wherein

5 said nitride-based semiconductor layer is formed on
the upper surface of said underlayer through a buffer Fig 4.
layer.

10 5. The nitride-based semiconductor element according to claim 1, wherein

15 said nitride-based semiconductor layer is formed to
be in contact with the upper surface of said underlayer.

20 6. The nitride-based semiconductor element according to claim 1, wherein

25 said mask layers have overhangs protruding above an
exposed part of said underlayer.

30 7. The nitride-based semiconductor element according to claim 6, wherein

35 said mask layers are at least partially inverse-
trapezoidal.

40 8. The nitride-based semiconductor element according to claim 1, wherein

45 25 said underlayer includes projection portions,

5 said projection portions are inverse-trapezoidal, and
10 said mask layers are formed to be in contact with the
15 upper surfaces of said inverse-trapezoidal convex portions. *figs 12,13*

5 9. The nitride-based semiconductor element according
10 to claim 1, wherein

15 said underlayer includes projection portions, and
20 said mask layers are formed to be in contact with the
25 upper surfaces of said projection portions so that side
30 portions of said mask layers protrude from said projection
35 portions.

40 10. The nitride-based semiconductor element according
45 to claim 1, wherein

50 15 said mask layers include:
55 a first mask layer formed to be in contact with the
60 upper surface of said underlayer, and
65 a second mask layer, formed on said first mask layer,
70 consisting of a material harder to etch than said first
75 mask layer.

80 11. The nitride-based semiconductor element according
85 to claim 1, further comprising a nitride-based
90 semiconductor element layer, formed on said nitride-based
95 semiconductor layer, having an element region.

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12. A method of forming a nitride-based semiconductor comprising steps of:

5 forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and

10 growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on the upper surface of said underlayer and said mask layers, wherein

15 the minimum distance between adjacent said mask layers is smaller than the width of an exposed part of said underlayer located between said adjacent mask layers.

13. The method of forming a nitride-based semiconductor according to claim 12, wherein

20 said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based semiconductor layer on the upper surface of said underlayer through a buffer layer.

14. The method of forming a nitride-based semiconductor according to claim 12, wherein

25 said step of growing said nitride-based semiconductor layer includes a step of growing said nitride-based

semiconductor layer to be in contact with the upper surface of said underlayer.

15. The method of forming a nitride-based
5 semiconductor according to claim 12, wherein
said mask layers have overhangs protruding above an exposed part of said underlayer.

16. The method of forming a nitride-based
10 semiconductor according to claim 15, wherein
said mask layers are at least partially inverse-trapezoidal.

17. The method of forming a nitride-based
15 semiconductor according to claim 12, wherein
said underlayer includes a substrate, and
said mask layers are formed to be in contact with the upper surface of said substrate.

20 18. The method of forming a nitride-based
semiconductor according to claim 12, wherein
said underlayer includes projection portions,
said projection portions are inverse-trapezoidal, and
said mask layers are formed to be in contact with the
25 upper surfaces of said inverse-trapezoidal projection

portions.

19. The method of forming a nitride-based semiconductor according to claim 12, wherein

5 said underlayer includes projection portions, and
 said mask layers are formed to be in contact with the
upper surfaces of said projection portions so that side
portions of said mask layers protrude from said projection
portions.

10 20. The method of forming a nitride-based semiconductor according to claim 12, wherein

 said step of forming said mask layers includes steps
of:

15 forming a first mask layer to be in contact with the
upper surface of said underlayer,

 forming a second mask layer consisting of a material
harder to etch than said first mask layer on said first
mask layer, and

20 forming an etching mask on a prescribed region of
said second mask layer and thereafter etching said second
mask layer and said first mask layer through said etching
mask serving as a mask thereby forming overhanging mask
layers.

21. The method of forming a nitride-based semiconductor according to claim 12, further comprising a step of growing a nitride-based semiconductor element layer having an element region on said nitride-based semiconductor layer.

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22. A method of forming a nitride-based semiconductor comprising steps of:

forming a plurality of mask layers at a prescribed interval to be in contact with the upper surface of an underlayer while partially exposing said underlayer; and
growing a nitride-based semiconductor layer consisting of a material different from that of said underlayer on an exposed part of the upper surface of said underlayer located between adjacent said mask layers to have difference in growth rate.

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23. The method of forming a nitride-based semiconductor according to claim 22, wherein

said step of growing said nitride-based semiconductor layer includes a step of growing facets having at least two types of different sizes on said exposed part of the upper surface of said underlayer located between said adjacent mask layers thereby growing said nitride-based semiconductor layer.